

IN THE CLAIMS:

17.(Currently amended) A method of producing in a solid transparent material, a hologram of an object, comprising the steps of:

developing a three-dimensional mathematical model of an electromagnetic field emanating from said object, said field producing an image of said object;

providing a pulsed laser beam, said beam being capable, when focused, of causing optical breakdown damage in said solid transparent material, each point of said optical breakdown damage being a light scattering center;

computing a three-dimensional set of points, such that light scattered from scattering centers located at said set of points holographically reconstructs said three-dimensional model; and

focusing said pulsed laser beam within said solid transparent material to create a set of scattering centers corresponding to said computed three-dimensional set of points, ~~onto each of said computed set of points, thus creating said set of~~ scattering centers, ~~which collectively defining~~ define said hologram.

18. (Previously presented) The method of claim 17, wherein the length of the pulses of said pulsed laser beam are less than tens of picoseconds.

19. (Previously presented) The method of claim 17, wherein said object is a real object.

20. (Previously presented) The method of claim 17, wherein said object is a virtual object.

21. (Previously presented) The method of claim 17, farther comprising the step of arranging said set of points as a set of diffraction lattices.

22. (Previously presented) The method of claim 21, wherein said set of diffraction lattices are such that light diffracted from said scattering centers located at said set of points forms a three-dimensional colored image.

23. (Previously presented) The method of claim 21, wherein said set of diffraction lattices are such that light diffracted from said scattering centers located at said set of points forms a stereoscopic image.

24. (Previously presented) The method of claim 21, wherein said set of diffraction lattices are such that light diffracted from said scattering centers located at said set of points forms an image capable of being viewed from a plurality of angles.